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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/005,717
Filing Date: November 08, 2001
Appellant(s): HUEBNER ET AL.

Huebner et al.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on December 26, 2006 appealing from the Office action mailed on March 11, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

Claims 1-16 are presently rejected.

Claims 17-20 are allowed.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner. The presently rejected claims 17-20 are withdrawn from finality and are now indicated allowable. Refer to Grounds of Rejection below.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5622868	Clarke et al.	4-1997

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Clarke et al.

Clarke et al disclose a method for detecting an analyte comprising providing a sensor, which sensor comprises a polymeric film and reagent dye, and contacting a

sample with the reagent dye. A colorimetric reaction occurs between the dye and analyte such that the absorptive properties of the dye are altered. A light source directs light through the polymer and to the reagent dye, such that the increased photo-absorption of the dye causes localized heating, resulting in the generation of electrical movement in the sensor device. The generated electrical energy is monitored and related to the concentration of analyte in the sample. See Clarke et al at columns 4 and 5. Regarding instant claim 7, see Clarke et al at column 5, line 4 disclosing the illumination of the dye at a preselected wavelength. Regarding instant claim 9, see Clarke et al at column 5, lines 49-65, disclosing an embodiment in which a plurality of different reagent dyes are provided on the substrate in order to enable detection of multiple analytes.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4-6 and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke et al.

Regarding the presently claimed method, Clarke et al differs in that it fails to disclose the measurement of unreacted dye (claims 4 and 10), and the selection of a particular duration of illumination. However, the measurement of a signal in an analytical sensor prior to reaction with a sample was notoriously well known in the art in order to account for background signals generated by the sensor device, optics and electronics. The selection of duration of illumination in the method of Clarke would have constituted optimization of a known result effective variable, conditioned only on the particular dye and sample being investigated. The presently claimed generation and use of a calibration curve are present in Clarke et al as depicted in Figure 2.

Regarding the presently recited apparatus, the apparatus of Clarke et al, depicted in Figure 1 differs from that claimed by applicant only in that Clarke et al fail to disclose the sensor device being position within a container to which a sample is to be added. The provision of such a container would have been obvious to one of ordinary skill in the art in order to enable analysis of larger volumes of sample, or alternatively as a means for precluding interfering substances from contacting the sample and the detected surface of the sensor device.

Allowable Subject Matter

Claims 17-20 are allowed.

(10) Response to Argument

I. *Whether Claims 1-3, 7 and 9 are unpatentable under 35 U.S.C. 102(b) as being anticipated by Clark et al. '868.*

Claim 1: Appellants argue that Clarke et al. is not sensing and detecting ***photo-induced charge movements*** resulting from illumination of a dye in contact with a target substance. Rather, it is to be designated as "thermal-induced charge movements" resulting from illumination of a dye in contact with a target substance. Examiner respectfully disagrees. Clarke clearly teaches a method for illuminating a dye/reagent in contact with a target substance/analyte. With respect to "***photo-induced charge movements*** consisting of isometric change or the ejection of electrons, protons or OH^- ions resulting from illumination of a dye which is in contact with said target substance" as recited in Claim 1, Lines 3-5, this appears to be inherent in the teachings of Clarke et

al. It is believed that light or in this case the illumination of light contains "packets" of energy called photons. These photons are being absorbed by atoms in the dye. Atoms are made up of protons, neutrons and electrons. So when an atom is illuminated by a beam of light containing photons, the electrons in the atom move to their "excited state", *a higher energy level.* When the atom is absorbing no light the electrons are at their "ground state", *a lower energy ground level.* For these reasons above, it is inherent that Clarke teaches "***photo-induced charge movements*** consisting of isometric change or the ejection of electrons, protons or OH^- ions resulting from illumination of a dye which is in contact with said target substance."

Claim 2: Appellants argue that Clark et al. do not teach, "choosing a dye which produces photo-induced charge movements upon illumination and which produces a different amount of photo-induced charge movements upon illumination when in contact with said target substance". Examiner respectfully disagrees. Clarke et al. teaches the type of reagent/dye is widely dependent upon the analytical procedure performed. Therefore, it appears to be inherent in the teachings of Clarke et al. that depending on the analytical procedure and the chosen dye, the dye will produce a different amount of photo-induced charge movements upon illumination when in contact with a target substance. (See Col. 4, Lines 43-50) Appellants further argue that Clarke et al. are chosen solely on the basis of their heat producing characteristics when in the presence of the target substance and not photo-induced charged movements. Examiner respectfully disagrees. Again, it is inherent that there is photo-induced charge movements due to the impingement of light on the device.

Claim 3: Appellants argue that Clark et al. does not teach "absorbing said dye onto a membrane." Examiner respectfully disagrees. In Appellants' disclosure on page 6, "The surfaces or membranes may comprise any thin dielectric film, such as for example Teflon, cellulose and polyvinylalcohol, preferably less than 5 microns in thickness and most preferably less than 1 micron, as well as self-assembled monolayers (SAMs), such as formed by adsorbing alkanethiols onto gold. Other plastics, polymers and proteins may be utilized, and different materials will offer advantages for different dyes by allowing for different..." Clark teaches the reagent strip/dye may be deposited directly upon a PVDF film with the electrode layer then covering the film surface between the reagent strips/dye. This is equivalent to Appellants' claimed limitation "absorbing dye onto a membrane".

Claim 7: Appellants arguments for claim 7 are the same as presented above for claim 1. Examiners response is addressed in Claim 1 above.

Claim 9: Appellants argue that Clark et al. does not teach a different dye to be absorbed on to the membrane and the different dye producing a different amount of photo-induced charge movements upon illumination. See discussion above.

II. ***Whether claims 4-6 and 10-20 are unpatentable under 35 U.S.C. 103(a) over Clark et al. '868.***

Appellants' arguments for claims 4-6 and 10-20 are separate but same as those presented for claims 1-3, 7 and 9. Examiner believes that those arguments have been addressed above.

Claims 4-6: Appellants arguments for claims 4 through 6 are the same as presented above for claim 1. Examiners response is addressed in Claim 1 above.

Claims 10-13: Appellants arguments for claims 10 through 13 are the same as presented above for claim 1. Examiners response is addressed in Claim 1 above.

Claim 14: Appellants argue that Clark et al. does not teach, "dye is formed as a self-assembling monolayer". Examiner respectfully disagrees. On page 9, Lines 18-21 of Appellant's disclosure "Self-assembled monolayers (SAMs) used as membranes 21 incorporating dyes or pigments on solid gold or other metal electrodes 22 must be illuminated from the monolayer side and cannot normally be illuminated through the metal, though transparent and electrically conducting..." Appellant's definition of a "self-assembling monolayer" is equivalent to Clark self-assembling monolayer. (See Col. 5, Lines 14-18)

Claims 15-16: Appellants arguments for claims 15 through 16 are the same as presented above for claim 1. Examiners response is addressed in Claim 1 above.

Claims 17-20: Appellants arguments are persuasive. Examiner has withdrawn finality of claims 17-20 and are presently indicated allowable. Refer above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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